

### Trend Study 00-1-01

Study site name: Tin Lambing Shed.

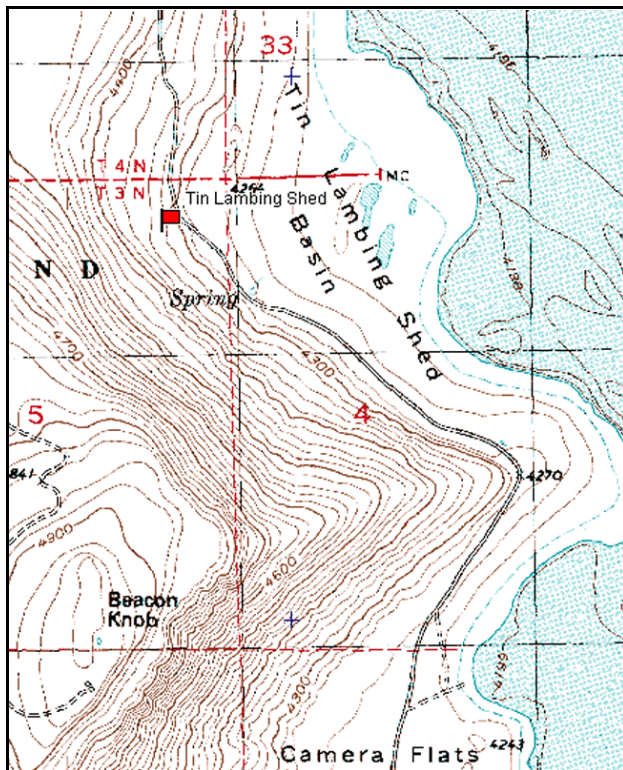
Vegetation type: Annual Grass.

Compass bearing: frequency baseline 307 degrees magnetic.

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

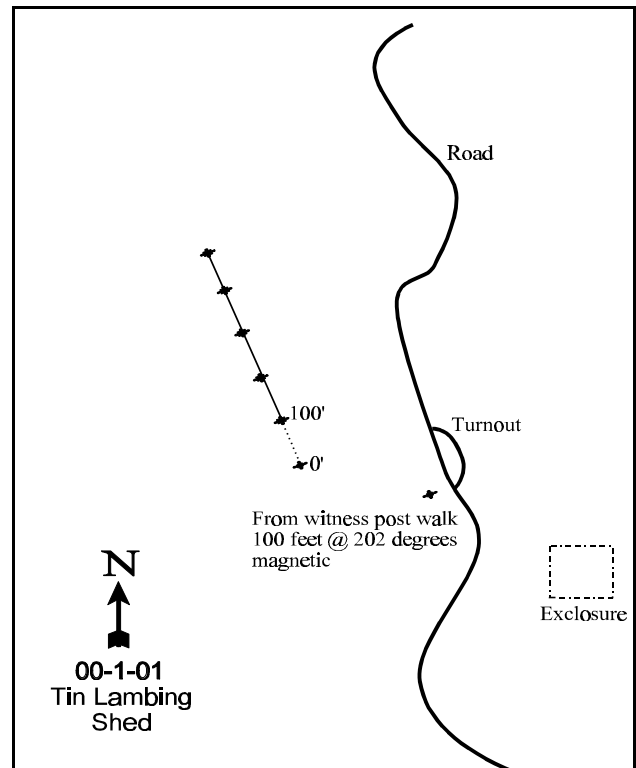
### LOCATION DESCRIPTION

From the main gate on Antelope Island, travel south for approximately 2.0 miles to a witness post on the right hand side of the road. From the witness post walk 105 ft. at a bearing of 202 degrees magnetic to the 0-foot baseline stake. The baseline runs in a direction of 307 degrees magnetic.



Map Name: Antelope Island North

Township 3N, Range 3W, Section 5



Diagrammatic Sketch

UTM 4542374 N 398851 E

## DISCUSSION

### Trend Study No. 00-1

The Tin Lambing Shed study is located in a small basin on the northeast side of Antelope Island. The site is about 1/4 mile from the shoreline and about 200 feet above the main road. Slope is very slight at an elevation of about 4,360 feet. The site burned sometime prior to site establishment in 1994. Fire continues to be a threat to the area due to the dominance of weeds and annual species. A pellet group transect read parallel to the vegetation transect showed 17 bison days use/acre (43 bison days use/ha).

Soils are derived from alluvial deposits from Lake Bonneville. Textural analysis indicates a sandy loam with a slightly acidic pH (6.2). Effective rooting depth (see methods) is nearly 18 inches with a soil temperature of 61°F. Potassium may be a limiting factor in the soil at only 8 ppm as values less than 10 ppm have been shown to limit plant growth and development. Vegetation cover has changed very little since site establishment in 1994. Litter cover increased in 1996, but decreased in 2001 to levels similar to that found in 1994. Bare ground has been low in all years, currently ('01) estimated at 6%. Cheatgrass brome provides the majority of the vegetation and litter cover in all sampling years.

Broom snakeweed and Wyoming big sagebrush are the only shrubs encountered on the site. Broom snakeweed has an estimated density ranging from 240 plants/acre in 2001 to 380 plants/acre in 1994. The population appears to be stable with no young plants being sampled in 2001. Wyoming big sagebrush was not sampled in the shrub strips in any year, but a few do exist on the site. In 1996, a small Wyoming big sagebrush plant was measured on the site with a height of 7 inches and width of 9 inches.

The herbaceous understory is dominated by one species, cheatgrass brome. Cheatgrass occurs in every quadrat in 1996 and 2001, and has increased in nested frequency since site establishment in 1994. Cheatgrass provides at least 60% of the total vegetation cover for all years. Other annual grass species sampled at lower frequencies include rattail fescue and six weeks fescue. Both warm and cool season perennial grasses occur on the site. Warm season species, purple three-awn and sand dropseed, remained at stable frequencies in 2001. Cool season grasses include salt grass, mutton bluegrass, Sandberg bluegrass, bulbous bluegrass and needle-and-thread. Mutton bluegrass and Sandberg bluegrass both declined significantly in nested frequency between 1994 and 1996, and remain at low frequencies in 2001. As a group, sum of nested frequency for perennial grasses declined by 40% in 1996, but increased by 19% in 2001.

Forbs are dominated by weedy species. Storksbill, wooly plantain and yellow salsify are the most abundant species by frequency. Prickly lettuce was abundant and significantly increased between 1994 and 1996, but was rarely sampled in 2001. Perennial forb sum of nested frequency decreased by 73% in 2001 due to the extremely dry conditions in the winter and spring of 2000-2001.

### 1996 TREND ASSESSMENT

Soil trend is slightly upward with abundant vegetative and litter cover that prohibit erosion. Bare ground cover has declined since 1994, likely due to the increase in litter cover. Browse trend is stable with very few broom snakeweed plants encountered. Annual weeds will provide competition for browse species and prohibit the population from expanding. The herbaceous understory is dominated by annual and weedy species. Cheatgrass dominates the site, although there are some perennial species still in the community. Even if fire is suppressed on the site, it will be extremely difficult to change the composition of the community. Herbaceous trend is stable at this time but with very poor composition.

### TREND ASSESSMENT

soil - slightly upward (4)

browse - stable (3)

herbaceous understory - stable but with very poor composition (3)

### 2001 TREND ASSESSMENT

Trend for soil is stable. Vegetation and litter cover are abundant and well disbursed minimizing erosion. Browse is not important to the vegetative component on this site due to the loss of all species to fire. Snakeweed is present, but is not very abundant and does not appear to be increasing. Trend for the herbaceous understory is stable and remains in very poor condition. Cheatgrass still dominates the site, although other annual and/or weedy species are present. Sum of nested frequency for perennial grasses increased due mostly to the increase in salt grass and bulbous bluegrass. Sum of nested frequency for perennial forbs dramatically decreased due to the loss of prickly lettuce and tansyaster. However, forbs were already infrequent. This site has little chance of becoming productive in the future without the input of considerable resources.

### TREND ASSESSMENT

soil - stable (3)

browse - n/a

herbaceous understory - stable (3)

### HERBACEOUS TRENDS --

Herd unit 00 , Study no: 1

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'94	'96	'01	'94	'96	'01	'94	'96	'01
G	Aristida purpurea	110	75	76	41	30	35	4.31	2.28	4.93
G	Bromus tectorum (a)	<sub>a</sub> 448	<sub>b</sub> 479	<sub>b</sub> 482	98	100	100	29.99	44.62	43.94
G	Distichlis spicata	<sub>a</sub> 92	<sub>b</sub> 138	<sub>c</sub> 175	27	48	54	3.07	1.15	2.88
G	Festuca myuros (a)	<sub>a</sub> -	<sub>b</sub> 228	<sub>b</sub> 184	-	62	53	-	4.78	3.04
G	Poa bulbosa	<sub>b</sub> 56	<sub>a</sub> 6	<sub>b</sub> 81	18	3	27	.78	.04	3.82
G	Poa fendleriana	<sub>a</sub> 37	<sub>b</sub> 4	<sub>ab</sub> 18	15	2	8	.44	.01	.09
G	Poa secunda	<sub>b</sub> 221	<sub>a</sub> 51	<sub>a</sub> 46	57	22	19	4.47	.33	.51
G	Sporobolus cryptandrus	56	59	38	28	25	17	.97	.91	.72
G	Stipa comata	<sub>b</sub> 58	<sub>ab</sub> 45	<sub>a</sub> 35	23	16	16	1.93	1.39	1.28
G	Vulpia octoflora (a)	<sub>c</sub> 136	<sub>a</sub> 17	<sub>b</sub> 49	37	6	14	1.06	.05	.19
Total for Annual Grasses		584	724	715	135	168	167	31.06	49.46	47.18
Total for Perennial Grasses		630	378	469	209	146	176	15.99	6.13	14.26
Total for Grasses		1214	1102	1184	344	314	343	47.05	55.59	61.44

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %		
		'94	'96	'01	'94	'96	'01	'94	'96	'01
F	Agoseris heterophylla	5	1	-	2	1	-	.03	.00	-
F	Calochortus nuttallii	-	1	7	-	1	3	-	.00	.02
F	Epilobium brachycarpum (a)	2	-	11	1	-	3	.00	-	.01
F	Erodium cicutarium (a)	<sub>a</sub> 137	<sub>b</sub> 284	<sub>b</sub> 316	35	81	86	1.25	4.18	9.41
F	Helianthus annuus (a)	<sub>b</sub> 26	<sub>a</sub> -	<sub>a</sub> -	10	-	-	.60	-	-
F	Holosteum umbellatum (a)	<sub>b</sub> 14	<sub>a</sub> -	<sub>a</sub> 5	8	-	2	.04	-	.03
F	Lactuca serriola	<sub>a</sub> 11	<sub>b</sub> 145	<sub>a</sub> 7	4	45	3	.04	2.07	.01
F	Machaeranthera canescens	<sub>a</sub> -	<sub>b</sub> 89	<sub>a</sub> -	-	29	-	-	3.75	-
F	Medicago sativa	-	-	-	-	-	-	-	.00	-
F	Plantago patagonica (a)	<sub>b</sub> 86	<sub>a</sub> 52	<sub>a</sub> 45	25	18	17	.46	.16	.21
F	Sisymbrium altissimum (a)	3	6	-	2	2	-	.01	.01	-
F	Sphaeralcea coccinea	<sub>a</sub> -	<sub>a</sub> -	<sub>b</sub> 12	-	-	7	-	-	.74
F	Tragopogon dubius	<sub>a</sub> -	<sub>c</sub> 93	<sub>b</sub> 63	-	38	28	-	1.67	1.41
F	Verbascum blattaria	-	13	2	-	5	2	-	.94	.06
Total for Annual Forbs		268	342	377	81	101	108	2.38	4.36	9.67
Total for Perennial Forbs		16	342	91	6	119	43	0.07	8.46	2.25
Total for Forbs		284	684	468	87	220	151	2.46	12.82	11.92

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

#### BROWSE TRENDS --

Herd unit 00 , Study no: 1

T y p e	Species	Strip Frequency			Average Cover %		
		'94	'96	'01	'94	'96	'01
B	Gutierrezia sarothrae	3	3	2	.01	.18	.03
Total for Browse		3	3	2	0.00	0.17	0.03

BASIC COVER --

Herd unit 00 , Study no: 1

Cover Type	Nested Frequency			Average Cover %		
	'94	'96	'01	'94	'96	'01
Vegetation	497	496	483	67.72	63.46	67.59
Rock	58	13	-	.16	.04	0
Pavement	92	114	70	.58	.74	1.13
Litter	495	500	488	54.37	73.58	50.65
Cryptogams	69	103	23	2.53	2.34	1.04
Bare Ground	125	154	215	5.24	1.79	6.78

SOIL ANALYSIS DATA --

Herd Unit 00, Study no: 01, Tin Lambing Shed

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
17.6	61.0 (18.6)	6.2	76.92	9.08	14.0	1.2	8.1	124.8	.3

PELLET GROUP FREQUENCY --

Herd unit 00 , Study no: 1

Type	Quadrat Frequency			Pellet Transect	
	'94	'96	'01	Pellet Groups per Acre '01	Days Use per Acre (ha) '01
Rabbit	2	8	-	-	-
Elk	-	1	-	-	-
Deer	1	3	-	-	-
Bison	1	6	4	208	17 (43)

## BROWSE CHARACTERISTICS --

Herd unit 00 , Study no: 1

A G R E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata wyomingensis																		
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0	7	9	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			00%										
'96		00%			00%			00%										
'01		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	0	Dec:	-			
												'96	0		-			
												'01	0		-			
Gutierrezia sarothrae																		
S	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120			6
	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	94	11	-	-	-	-	-	-	-	-	11	-	-	-	220	7	8	11
	96	13	-	-	-	-	-	-	-	-	13	-	-	-	260	9	9	13
	01	11	-	-	-	-	-	-	-	-	11	-	-	-	220	14	19	11
D	94	2	-	-	-	-	-	-	-	-	-	-	-	2	40			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'94		00%			00%			11%			-26%							
'96		00%			00%			00%			-14%							
'01		00%			00%			08%										
Total Plants/Acre (excluding Dead & Seedlings)												'94	380	Dec:	11%			
												'96	280		0%			
												'01	240		8%			